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Lesson 43 - Cooking Our Food

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1. A Statement Of Purpose

In the foreward to a popular book on cooking we find these words: "Cooking is not a particularly difficult art, and the more you cook and learn about cooking, the more sense it makes." It is the purpose of this lesson to show you that cooking makes no sense whatsoever in any lifestyle designed either to build health or to maintain it. In fact, to a hygienist, cooking is the way of the devil rather than the way of an intelligent person, one knowledgeable about the capacities and limitations of the human body and of what is entailed in the proper preparation of food so that it will be capable of maintaining a high level of health throughout an extended life span.

By far the most important cause of ill health in man is his many and habitual dietetic errors of one kind or another, the immediate results of which are not felt and intelligently evaluated. We can abuse our digestive organs for years and feel no pain. We can create problems for our kidneys by overconsumption of protein for years and feel no pain. However, the time comes when these organs rebel and we become intelligently aware of a diseased condition which is manifested either in the damaged organ itself or in some other place remote from it which has been made diseased through malnutrition or by the presence of irritating toxic metabolic wastes accumulated beyond the body's overworked eliminative powers.

It is the gradual erosion of health by the more or less constant bombardment by erroneous eating practices which, in most cases, is responsible for the destruction of health. At the present time, after hundreds of generations of experiences with a diet of cooked breads, cooked meats and fats, in actual defiance of the body's inability to process or use them, we see refined white sugars and syrups used to sweeten just about all canned, frozen and cooked vegetables and fruits; in these "modern" times, we have badly prepared meals cooked to perfection but lacking all properties essential to life; we are confronted on all sides with malnutrition and disease as evidenced by the fact that over 99 percent of the populace has dental caries, 70 to 80 percent are overweight; spines curve and vitality weakens; more and more people wear eye glasses due to impaired vision; at least 70 percent of the people are constipated, and we witness a rising and alarming incidence of cancer and other horrendous degenerative diseases. We find ourselves fighting an almost hopeless war on misery and disease which we ourselves have created.

Here in Tucson we have recently been placed on notice that hospital "care" of the sick is expected to rise another twenty percent during the coming year. This is an age of despair and of fear, particularly among the elderly who are faced with a future which they believe they cannot control. We are convinced that this country could witness a metamorphosis in the health of its people if we could all adopt a manner of

living and eating which is sane and biologically sound; if we could convince everyone to adopt a non-stimulating uncooked diet, one which contains the necessary life elements in the right quantity and in the correct proportions and in the highest degree of organization, these attributes being found only in nature's food packages, ready for our appropriation when eaten just as provided for our use, uncooked. Otto Carque tells us that we should always be guided in the selection and preparation of our foods by the fact that we cannot improve on nature, and that all foods which we enjoy in their natural state are the foods which are best adapted for maintaining health. We feel that what is most needed is self-control and knowledge of how to live according to biological need. The purpose of this lesson then is to enlarge our understanding of the benefits to be accrued by the consumption of uncooked food and to understand why health can be, so manifestly improved and in a relatively short time on an all-raw diet.

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2. What is Cookery?

Cookery is defined as the art and science of preparing food for eating by the application of heat. The various preliminary methods by means of which food is prepared for the particular recipe or procedure are also usually included in the term. We refer to such prior practices as cleaning and removing certain inedible portions. Other preparatory processes as cutting, shredding, salting, addition of spices, methods of mixing and shaping, and so on are also included. In this discussion we will concern ourselves mainly with the effects produced by the application of heat to foods with little consideration being given to preparation procedures and methods since most of these are commonly recognized as being destructive of nutrient values to some degree.

2.1 Historical Insights on Cooking

In the civilized world, after due consideration of the state of one's health, food is probably the single most factor of living that outranks all other aspects of living in commanding mankind's attention. The various methods of preparing and eating food are extolled as arts and can give one a cultural image of the peoples of the world. We can often get a better understanding of people when we understand their cookery. Epidemiological studies reveal that much can also be learned about the status of their health by studying what they eat and how their food is prepared.

As is stated in *Cuisines of the Western World* authored by Elizabeth Gordon and published by Golden Press (The Heart Corporation, N.Y., 1965), the cuisines of various cultures have been cross-pollinated by explorers, by wars, by colonization, by immigrants, by religious customs and, in more modern times, by tourism. Only a handful of cultures have remained isolated. Gordon reflects how what people eat and how they prepare it is often determined by their climate, their agriculture, their wealth, their social system, who they conquered or whom they were themselves conquered by. The cookery itself reflects both folk wisdom and the culture of the more affluent, past and present.

It is doubtful if we will ever be able to trace the origins of cooking fully and completely. We know that the practice is deeply rooted in ancient times. Probably as populations grew and tribes were compelled to seek nourishment in more remote and less populated areas, people were forced by hunger to eat quail, duck and other small birds, at first in the raw state, then later salted, and still later boiled or roasted over an open fire. Due to the fact that grains were easily grown, kept well and were easily transported, they were called into use early in history as human food. Herodotus records that the early Egyptians were among the first to till the soil and that they ate largely of fruits and vegetables, and these uncooked. It is said that they also were skilled in the baking of a great variety of breads. However, it appears that the

early Romans were among the first really to popularize cooking food. They also were skilled bakers of bread. Onions, garlic and leeks were commonly in use in both countries as vegetables but the members of the priesthood were forbidden to use them. Legumes were also on the prohibited list.

The peoples living in those countries bordering on seas and oceans soon learned to fish and many varieties of fish became staple articles of foods among such peoples as the Greeks and Italians. Archestratus, a Greek poet of the 4th century, tells of boiling fish in a mixture of oil and wine and spicing it with fragrant herbs. The Greeks introduced other slaughtered animals to the bill of fare, including the ox, sheep, pigs, lambs and goats. Roast lamb was especially prized in Greece and in other Mediterranean cultures, just as it is now. The Greeks also used a wide variety of vegetables which grew in the friendly warm climate, vegetables such as cabbage, leeks, onions and lettuce. Sesame seeds, figs, olives and nuts grew in abundance and were eaten not only raw but also cooked in a wide variety of cakes and breads.

The early Romans had access to an even larger variety of food. The peasant classes subsisted largely on grains and lentils cooked with a few vegetables and on the wild fruit of the country. Lentil soup and stews are still popular in many parts of Italy today. After the conquest of Greece the wealthier class of Romans came to know and enjoy an elaborate array of foods well-cooked in olive oil and adorned with fancy gourmet sauces which were well-seasoned by spices, especially garlic. Because of the heat, foods, especially meats, were subject to rapid decay. The cooking sauces and the seasonings helped to disguise the foul odors and to make the repugnant taste of decayed meat more palatable, so their use rapidly became not only tolerated but actually prized.

In France and Italy and also in more northern countries, the milk provided by horse mares, goats and cows was allowed to sour and curdle and then often stored in caves during times of plenty and brought out for human consumption months and years later in times of scarcity. Thus, was born the fine art of cheese-making.

In the dawn of civilization the British and their Teutonic invaders apparently paid little attention to cooking but by the time the Middle Ages had arrived, cooking was considered a fine art. The same can also be said of France and Spain who early on adopted Italian methods with suitable variations developing according to climate and availability of materials. The French, of course, later became famous for their tantalizing sauces and their use of wines, and more delicate herbs than are commonly used in either Spain or Italy.

Many of the ancient cooking practices influence the "art" in Italy to this day. Just a few years ago we travelled on an Italian freighter from Long Beach Harbor in California to Trieste, Italy. Thanksgiving Day came while we were yet on the high seas and in honor of the only Americans on board, ourselves, the chef prepared a Thanksgiving turkey. He personally conducted the bird to the dining room. The chef, in typical chef's attire including his grand hat, laid it before us with a flourish and a magnificent bow. There the turkey lay, reposing on a huge platter, adorned with rosy tinted crabapples and smelling to the high heaven of garlic! In honor of the American holiday, Dr. Robert was asked to carve the bird and to serve the plates for the officers and other passengers on board. We all ate of the bird while the proud chef looked on eagerly noting our responses to his culinary efforts. Never have we eaten of such a bird and never will we again! It was stuffed with olives and spiced breads, it dripped with olive oil and reeked of garlic. The sharp spices burned the delicate linings of our alimentary tracts and we tasted that bird for hours after the feast. But, we never let on and the crew's joy was complete as they watched us eat of that unique product of the ship's culinary art.

In the Far East, rice, fish and wild fruits became staple articles of diet. It is said that Confucious (551-479 B.C.) was the first gourmet in China setting forth standards for ingredients and methods to be followed. These were, of course, changed as the population increased and wandered. Millet was the popular grain in northern China, With rice being the staple in most other parts of eastern and southern Asia. Spices were widely used, especially in the more southern regions where heat rapidly caused onset of decay.

Thus we can see that early cookery was more or less forced on the people both by the scarcity of food at certain times of the year and by the lack of refrigeration. As time went on, the palate became more and more accustomed to cooked foods and probably in direct proportion to the quantity of cooked food consumed, the health of the people deteriorated.

In America where the land was largely virgin and offered up a wide variety of foods of all kinds, the early settlers became accustomed to eating enormously of many dishes and courses. Graham relates how the dockworkers of Greece and Spain in the middle of the last century who ate simple fare consisting largely of coarse bread and raw fruits were able to outperform and outlast their American counterparts who ate more liberal fare. Graham also tells about native tribes living on remote Pacific Islands who lived long and healthy lives subsisting largely on coconuts and on wild fruits indigenous to the area. Biblical records also show that peoples in the early days of history often lived for many centuries on their very restricted fare. We know that most of the peoples living in and around the Mediterranean Sea ate largely of fresh fruits and nuts and we find even today that the people living in that area still eat and enjoy much more fruit than the average American does. We well remember another visit to Italy when we travelled on a train going into Rome. It was Christmas time and we were fortunate to share a compartment crowded with six Italian soldiers, just in their teens, who were going home for the holidays. They carried a variety of fruits in their packs and happily shared it with "the old ones," as they called us. Unhappily, as the years have passed, so have many of the fruit stands that formerly graced the back streets of Europe, these having been replaced in many instances by American-type supermarkets.

We think sadly of the little children growing up today in Europe and elsewhere remembering fondly a time some years ago when we spent a memorable and happy day with some 300 beautiful rosy-cheeked children from the countryside outside of Paris, marveling at their good looks and good manners and most of all their composed behavior. We contrast the memory of that day with what we observe in today's American children, many of whom are but hyperkinetic-charged caricatures of what truly healthy children can and should be. Today's sick children are largely the product of culinary "art," the art of making hot-dogs, potato and corn chips, pretzels and "Big Macs" oozing in mustard and relish, of doughnuts and carbonated chemicalized drinks, of sugar-laden cereals that pop and make noises but offer little in the way of nourishment to growing bodies.

We look at our athletes today and see how the various sports are dominated by certain ethnic groups who, because they are not far enough removed from their native, more health-promoting, eating habits, retain a far greater measure of strength, endurance and agility than their Caucasian counterparts who are the products of many generations of gormandizing and a century or more of relative affluence. The peoples of the world cook their fancy dishes and civilizations fall apart while the peoples writhe in the agony of the catastrophic diseases that afflict them.

The dedicated Life Scientist knows that all cooking is folly because it has been shown to be destructive of health. He knows that by its very nature cooking is destructive of the forces that sustain life, that it produces certain adverse chemical changes in the food itself which renders it less capable of perfect digestion and assimilation at the cellular level; that instead of leading one into a world of "hidden delights," the practice of eating a preponderance of food spiced and cooked to "perfection" can, on the contrary, create a subtle erosion of wellness which will be ongoing while life continues and the practice persists; that it can result in tissue and organ degenerative changes upsetting homeostasis; that eating primarily of cooked food can bring upon us the curses of premature aging, disease and death.

2.2 What is Food?

Food consists of those substances which are useful in building the body (as in growth), in the healing and reparative processes which sustain life, and finally, as a source of sufficient energy for the performance of metabolic purposes, and for fuel to maintain body temperature. Seven million new blood cells must be produced every second we live. The material from which these must be manufactured is food.

Food comes to humankind from and is supplied by the vegetable kingdom. Plants and animals live their allotted time on earth and are then, in due course, returned once again to the earth from whence they came. Here they are set upon by the Saprophytes, members of the "in-between" group of living things which do not seem to fit well into either category, especially by members of the Monera Family, the bacteria and molds, who by their own simple metabolic processes disorganize the highly complex organic molecules into simpler inorganic wastes which are excreted back into the soil, there to be taken up as food by the plant and reorganized into widely diverse forms of vegetable matter which we recognize as different varieties and parts of vegetables, fruits, nuts and seeds, these being digestible to some extent by all animals, including man. The original inorganic elements as returned to the soil would poison man but, combined in certain new complex organic formulations and presented to us in food packages especially designed for us, they provide us with rich nutriment for the sustaining of life.

Not all plant products are acceptable but Man is biologically and physiologically structured to accept a wide variety of suitable plant products as his food and, if he sustains himself only with the kinds of food to which he is best adapted, he can maintain his health and experience no disease throughout his entire lifetime provided, of course, that he also provides himself with a suitable amount of all the other known requisites of his organic existence: warmth and sunshine, fresh air, pure water and a congenial (friendly, not hostile) environment, and avoids accidental injury.

Anthelme Brillat-Savarin, the 19th century gastronome, said "Tell me what you eat; I will tell you what you are." Have you eaten too often and too well of sugared goodies? Have you overindulged in animal proteins even though cooked to perfection? If so, there are revealing signs to disclose your secrets. The well-trained and experienced hygienic practitioner doesn't even have to inquire of you as to your past eating practices and preferred foods. He can make a valid judgment of your past indulgences both as to lifestyle and food practices by a combination of careful visual examination and psychologically directed conversational give and take.

Man cannot eat of the soil and live. He cannot take into his system inorganic elements and build a healthy body. He cannot eat the products of decay and have a long and healthy life. He cannot eat of "foods" to which he is not well adapted, such as animal flesh and products derived from or yielded up by animal bodies, and have a long and healthy life. He must, on the contrary, eat foods designed specifically to answer his structural and functional requirements and to eat them without alteration of any kind, largely and primarily in fact as they are yielded up to him by field and orchard. This is food fit for peasant and for king, for child and for adult. Cooking food alters it, the application of heat makes all foods less acceptable, if not repugnant, to the digestive mechanisms provided. Such food is damaged, changed and man cannot fully adapt to it or profit from its use. When he consumes it in response to perversion of his palate, he is required to yield up some measure of his own well-being in exchange for momentary pleasure.

2.3 Cooking Processes

No sharp distinctions can be given to distinguish among the various cooking processes. They all involve heat, of course, and differ only in the degree of temperature applied and the method of applying the heat. The various methods can be categorized as follows:

1. The application of dry heat as in baking and roasting.
2. The maintenance of a constant wet heat as in boiling, simmering, steaming and poaching.
3. Braising or cooking at high temperatures in fat to retain flavor and juices, a method commonly used to sear meat which is then cooked, usually covered, in a pot with a small amount of liquid added, usually water, wine or beer.
4. Frying is used to indicate cooking in fat in a pan or on a griddle over direct heat. Sautéing is a variation of this method as is deep frying in which the food is totally immersed in the hot fat as is done in the preparation of french-fried potatoes.
5. Broiling or grilling is a method by means of which the foods are exposed directly to heat either in

a broiler or over hot coals, as in barbecuing.

Microwave cooking has recently been introduced and has become exceedingly popular among women who work. Its long-term effects have yet to be evaluated. Slow cookers have also become popular in recent years among women who work all day and like to prepare one-dish meals. These devices cook foods at temperatures of about 200 degrees Fahrenheit and maintain them at these temperatures for eight hours or longer.

Food scientists have replaced many long familiar foods such as fresh orange and other fruit juices with chemical substitutes which compare favorably in taste but not in nutritive value with nature's product. These chemical products have become popular because of their lower price tags and availability requiring little, if any, preparation.

Industry has learned to fabricate many substances now offered to the public as substitutes for the real thing, such products as synthetic chocolate, calorie-controlled foods with low cholesterol and low saturated-fat content for the overweight, substitute eggs and substitute meats, made from textured vegetable proteins, and numerous other pseudo foods. It is projected that in tomorrow's world, the produce section of the supermarket will be hidden away in a corner, difficult to find, if it exists at all. This is why it is important for Life Scientists who value their own health and wish to keep the race viable, to become aware of today's real world and of what will be offered tomorrow, to learn what happens to food when subjected to man-instigated changes wrought by the application of heat, and to make their voices heard. We must learn to relate our knowledge of physiological reality both in the world of commerce and in the halls of government.

2.4 Cooking and Vitamins

Some vitamins are more resistant to high temperatures than others. However, the formulation, development, growth and vigor of an individual are dependent upon whether or not all of his basic organic requisites for living are met and the degree of perfection in all areas will be in a precise relationship to the extent to which each is provided.

Vitamins are one of these basic requirements for living. They are provided for him in man's food and, for man to live in a prime state of health, his needs in this respect must be amply supplied, according to his need. Without a sufficiency of all vitamins, body synergism may be put off balance with the result that growth, development and vigor will be diminished to some extent and, when such sufficiency is long continued, certain deficiency diseases may arise.

The following possible deficiency conditions may be observed:

A. When Vitamin A is deficient:

1. A failure of the bony structures to grow normally.
2. Excessive dryness of the outer and inner skins.
3. A lack of adequate mucous membrane secretions.
4. Various eye diseases.

B. When Vitamin D is lacking:

1. Abnormal bone and teeth formation.
 - a. Rickets with malformed legs, spine, etc.

C. When Vitamin E is in short supply:

1. Changes in blood making.
2. Adverse changes in the musculature and in the circulatory and central nervous systems tissues.
3. Increased loss of Vitamin A and Carotene by oxidation in the intestines.
4. Red blood cells become more susceptible to destruction.

D. Vitamin B Complex - Specific members may give rise specific deficiency diseases, among which we find:

1. Reduction in general metabolic efficiency.
2. Nervous disorders.
3. Loss of appetite.
4. Certain gastric disorders.
5. Skin lesions (outer and inner skins).
6. Energy transmission failures.
7. Insomnia.
8. Muscle pains and cramps.

As Life Scientists we must be aware of the fact that all diseases are the product of toxemia. An insufficiency of vitamins can be a contributing factor, not the sole cause, of a diseased state. The root causes of any diseased state are, multitudinous, not capable of isolation.

When man first began to use fire on his foods, he began to destroy himself. One reason why this is so is because the application of heat is somewhat destructive of vitamins and the higher the temperature, the more destructive heat will be to the vitamin presence. As we indicated previously in our discussion in Lesson 39, vitamins are intimately interwoven with all the other nutritional and chemical elements offered in food and that the effectiveness of all nutrients can be somewhat reduced and even perhaps disintegrated by a deficiency in any one nutrient and this, of course, would include vitamins.

A few specific examples of how heat can reduce vitamins in certain foods will suffice to show how destructive normal cooking can be to one vitamin, Vitamin C. Measurements are given in milligrams and are derived from data supplied by the U.S. Department of Agriculture.

Apricots, fresh halves. 1 cup	16
Apricots, canned, water pack, 1 cup	10

Mung Bean Sprouts, raw. 1 cup	20
Mung Bean Sprouts, cooked. 1 cup	9

Blackberries, fresh. 1 Cup.	30
Blackberries, canned, water pack, 1 cup.	17

Pears, 1 cup fresh, sliced or cubed.	7
Pears, canned, water pack. 1 cup.	2

From these few examples, the student can see that, while the Vitamin C presence is not completely destroyed, it is reduced. Any reduction, of course, will change the proportions planned by nature and will, therefore, be anti-health.

When foods are examined for specific content, we find that all foods contain essentially fiber, vitamins, minerals, enzymes, carbohydrates, fats, proteins, some flavor enhancers, water and poisons of one kind or another, and in varying amounts, even in man's most desirable foods, these being easily eliminated by

the normal excretory processes. Food, however, is far more than the sum of its divided and carefully separated parts. Why this is so, no man knows but it is a proven and indisputable fact that man will starve and die if fed solely on any or, indeed, on all of these isolated food factors, but will thrive when he eats unfragmented nature's food packages that contain the very same substances.

Persons who eat preponderantly of cooked food consistently deprive themselves of vitamins which, as we recall from our previous discussion in Lesson 39, are the important metabolic regulatory assistants to hormonal function and the vital enzymatic catalytic action. We view with sadness the meals eaten by many of our elderly citizens who frequent cafeterias and similar moderately priced restaurants.

Invariably their trays reveal depleted, cooked, poorly-combined foods. The usual menu consists of a meat dish, one or two cooked vegetables, usually only one, rolls made of devitalized white bread plus a dessert, frequently a piece of pie or cake. Many can afford but one or two items and, more often than not, choose a meat dish, adding perhaps a roll. Few even do more than glance at the array of salads and fruits. Certainly, the vitamin presence in such meals must be greatly diminished, if not completely so. It is little wonder that their gray complexions and their curved spines reflect the weariness within, of both body, spirit and soul, these being the visible signs of malnutrition and systemic decay.

Most American children today are brought up on cooked, vitamin-deficient foods. It is time that we hygienists take a critical look at America's children and observe their curved spines that encapsulate and crowd the lungs and place all abdominal organs in a stressed posture. Take a look at all the mouth-breathers among them. Their nasal and respiratory passages are blocked with mucous discharge. We see them in school classrooms where we sometimes lecture, teenagers slouched over their desks, their bodies reflecting systemic fatigue; or, the opposite, bodies with taut nerves, falsely stimulated. Far too many of them are hyperkinetic sugar-starch-fat-rich young adults with still-growing bodies trying to make it on vitamin-deprived cooked foods. Unfortunately, it is our belief that most of these teenagers will live to curse the world of which they are a part.

So long as malnourished persons eat of cooked devitalized foods, they can take all the synthetic vitamins in the world and still not meet the needs of their bodies for these nutrients. The only sane way to satisfy our requirements for vitamins is to eat the foods that supply them: fresh ripe fruits and vegetables. There can be no piece-meal approach to dietary adequacy and superb health. Optimum nutrition is essential and it can be obtained only when the food eaten is optimum in all nutrient values including vitamins.

These required food values will be optimum only in freshly-picked, organically-grown, ripe fruits and vegetables and these eaten uncooked and as soon after picking as possible since some vitamins are reduced in value upon standing, even when refrigerated. Freshly-picked foods such as we have described will be whole foods, rich not with isolated food factors of doubtful value, but rather with all of them, properly proportioned as designed by nature's wonderful food factories, the living plants.

Fresh uncooked foods will supply the body with a superabundance of all the food factors we require and with all the vitamins, known and unknown. Cooked foods will always offer an inferior depleted product, one destructive of health.

Vitamin A is regarded as being stable to heat at ordinary cooking temperatures but both the vitamin and beta-carotene are oxidized and destroyed by air. Therefore, when food is cut and chopped and then cooked in water and the water discarded after cooking, considerable amounts of this vitamin will be lost when foods are cooked in this manner.

The vitamin D content of most foods is either nonexistent or present only in very small amounts. Therefore, cooking is not an issue in the case of vitamin D. At any rate, our requirements for vitamin D can be fully met when we expose our bodies to sufficient sunlight.

Vitamin E is somewhat affected by cooking. However, it is very sensitive to slight oxidative changes in the fats contained in the foods in which it is found. Therefore, cooking will produce certain destructive chemical modifications in this vitamin by disorganization of the fats.

All members of the vitamin B complex are water-soluble and, consequently, cooking foods rich in members of this group can be highly destructive of the entire complex. High temperatures dry heating is somewhat less destructive but will also destroy to some extent B complex member vitamins.

The extent of vitamin loss by cooking will depend upon the following variables:

1. The method of cooking employed as, for example, boiling, stir-frying, as in wok cookery; and so forth.
2. The temperature to which the food is subjected as, for example, cooking at lower temperatures as compared to roasting and baking at high temperatures.
3. How long the food is subjected to the heat.
4. The relative presence of oxygen, as for example, heating food in a covered pot will reduce vitamin loss as compared to cooking without the lid on.
5. The presence to which the food may be subjected. Cooking in an ordinary cooking utensil will not produce as much vitamin loss as will be occasioned when food is cooked in a pressure cooker which not only builds up the pressure but also maintains the cooking temperature in excess of 270 degrees Fahrenheit.
6. The presence or absence of light. Darkness tends to protect against some measure of vitamin loss.
7. How much and to what extent the food has been diced, shredded and/or chopped before cooking.
8. The material from which the cooking utensil is made, iron being probably the most destructive to vitamins. Iron utensils are highly porous and whatever food is cooked in it loses a certain portion of its vitamin content to the pan. Greases, juices and blood from meats soak into and remain in the porous iron, carrying with them any remaining vitamins that these vitamin-poor foods may contain.

Herbert M. Shelton points out that the average loss of vitamin C in foods served to patrons of restaurants is 45 percent; of thiamine, 35 percent. It is wise for persons who must eat in restaurants to eat early, just after the food is placed out in expectation of the early supper crowd, about four o'clock in most areas. The newly-prepared food would be at its best at this time. We also advise patrons to patronize those restaurants where salad bars are featured.

We have no trouble eating while travelling. If we fly, we either do not eat at all or we advise the air carrier the day before take off that we wish to be served a fruit meal. There is no extra charge for this service. If we drive, we carry an assortment of compatible fresh fruits with us. If we stay in a town or city for several days, we occasionally eat at a restaurant like Big Boy which features either a fruit plate that is quite acceptable or a well-equipped salad bar. Many of the better steak houses pride themselves on the variety of salads featured. We avoid most cafeterias because their salads are usually covered with sugar-salt-vinegar dressings or liberally dosed with commercial mayonnaise.

2.5 Cooking and Food Fibers

The chemical composition of all fibers found in vegetables is predominantly cellulose, a very complex polysaccharide. So complex is the cellulose molecules that it is largely unaffected by the application of alkaline secretions, a fact which in and of itself means that cellulose fibers cannot be fully digested by the ordinary digestive secretions produced in the human digestive canal.

The student will recall from his previous studies that all carbohydrates are composed of carbon, hydrogen and oxygen in varying arrangements, these being divided into several categories: simple sugars, complex sugars, gums and pectins, dextrans, starches, glycogen and cellulose. The formulas for each category may be written as: $C_m(H_2O)_n$.

The number of carbon atoms and the number of possible combinations of H_2O vary according to the complexity of the various molecules under consideration, the more complex carbohydrates being formulated of many simple sugar molecules (single molecules) all joined together, somewhat like freight

cars in a train.

Glucose, a single comparatively simple molecule, is the monomer unit from which two major families of carbohydrates are formed: the starches and celluloses. Both of these two complex formulations are hydrolyzed (that is, disorganized) by a solution of certain acids in water to form smaller chemical units and eventually, when fully resolved, into chemical "fragments" called glucose.

The starches can be hydrolyzed by enzymes found in the human saliva, but the celluloses found in fiber cannot. According to Davenport (*Physiology of the Digestive Tract*, 3rd Ed. by Horace W. Davenport, Yearbook Medical Publishers, Inc., 35 East Wacker Dr., Chicago, Ill.), no members of the mammalian family possess an enzyme to catalyze the resolution of cellulose. In man there is a firm linkage between an enzyme such as ptyalin and the starch, the two "fitting" together, as it were. This fitting together is called "alpha-glycoside linkage." Such is not the case with the celluloses. The enzymes in saliva and elsewhere in man's digestive tract do not "fit" into the cellulose molecular arrangement and therefore have no effect upon the celluloses. This nonfitting linkage is known as a "beta" linkage. This is why the fibers in uncooked food can pass on through the digestive tract virtually unchanged chemically. Cellulose is partially digested by bacteria in the colon with the formation of volatile fatty acids which can stimulate peristalsis and act as an aid to defecation. Most of the cellulose contained in foods eaten will be given off in the feces when defecation occurs at least once in 24 hours but in constipated persons such will not be the case. Davenport states that in constipated persons digestion occurs within the central part of the fecal mass, and acid products may be absorbed (p.212).

The three classes of carbohydrates, according to molecular complexity, are:

1. Monosaccharides - one molecule (the monomer unit)
2. Disaccharides - two molecules joined together
3. Polysaccharides - more than two molecules.

Cellulose is a polysaccharide and the most complex of all the carbohydrate molecules. The polysaccharides have very large molecules: about 10 molecules being joined together to form glycogen, 25 for the simpler starches and 100 to 200 for the celluloses.

For efficient and thorough digestion the body, requires bulk in its food and nature has skillfully designed food for man which contains appropriate amounts of bulky cellulose fiber, the amount incorporated in man's food apparently being proportioned exactly according to the design of the human alimentary canal and its ability to make use of it. Thus, it can be seen that persons who eat food not intended as food for man will do the body a disservice as will those persons who may eat suitable food but then alter by application of heat, the fiber content of that food, as in canned cooked food for babies.

We might assume from our discussion thus far that some foods might contain too much fiber, more than the human body might be able to handle efficiently. This is indeed true and such foods should certainly be either completely avoided or, at least, restricted in the human food intake. They place too great a burden on the peristaltic and eliminative capabilities of the intestinal equipment. The cellulose in some foods, especially if consumed uncooked, can be abrasive to the mucosal lining and, long term, could lead to irritation and inflammation of the food canal. We refer to such foods as most roots, dried legumes and grains. In the uncooked state, these foods can be highly irritating as well as obstructive to free passage of the fecal residue, a condition which leads to packing of the canal with accumulating amounts of dried obstructive fiber, making the walls more or less rigid (the "piped" colon) and laying the groundwork for putrefaction and fermentation of contents. Obviously, too, the high cellulose content of the mentioned foods prevents complete digestion and interferes with absorption of nutrients that may be present in the foods.

We note that the fiber content of the foods generally conceded as being most acceptable to man's digestive capabilities is quite low as, for example, in fruits, the perfect human food. Even so, persons who subsist largely on uncooked fresh ripe fruit do not suffer from constipation but, to the contrary, have regular and sufficient fecal exodus. When the foods that are best adapted to man's requirements are

eaten, the fruits, the leafy green vegetables and perhaps a few nuts and edible seeds, and these are well masticated, we note that the digestive process extracts a maximum quantity of nutrients from the food and leaves most of the cellulose behind intact and this is then readily eliminated.

The ingestion of any unwholesome food, whether it is cooked, processed, or improperly combined will eventually result in systemic toxemia. This unwelcome state of ill health affects the entire organism since the body reacts and functions as a whole.

The body may be thought of as a unified structure working in harmony to maintain health. All bodily functions will be affected by the toxemic state and this includes the large intestine. Thus, constipation is a common result which we bring upon ourselves by eating cooked or otherwise denatured foods.

However, when raw fruits and vegetables are eaten in the presence of true hunger, all bodily functions will proceed unhampered and the digestive process also proceeds perfectly.

Dr. Vetrano cautions us to follow our instincts and eat only when true hunger is present for proper digestion of our food. She says, "When you are truly hungry the exact quality and quantity of salivary and gastric enzymes are secreted for the amount and kind of food eaten and the body moves the food along the gastrointestinal tract fast enough for proper digestion yet slow enough for maximum absorption."

We must not think of one particular food to move our bowels or another food to improve our vision, etc. The proper food will provide the correct conditions for the human body to carry on *all* of its functions and health will be the natural result. When the entire organism is healthy, so will be the bowels and the body will eliminate all of the waste products of metabolism along with the food fiber.

We had a client not too long ago whose lower GI X rays were remarkable. She had a piped ascending colon that was fully three inches across, the transverse colon had fallen and was U-shaped. It, too, looked stuffed with debris while the descending colon was twisted, gross-looking. Her dietetic history revealed that she ate the usual cooked American fare. Undoubtedly, the silent nerve pain channels had been well etched over many years. Just over 40 years of age, she now sees the evidence of 40 years of intestinal mismanagement, of eating so much cooked food and most of it of questionable quality. It will take considerable time to undo the damage, if it is even possible. However, there is some evidence of improvement. She had been unable to have normal bowel movements for over 12 years and is rejoicing in the fact that she is now able to have a normal, unassisted bowel movement once or twice a week. Occasional short fasts to permit rest and healing of her abused body followed by the gradual introduction of more and more uncooked foods, especially watermelon, plus a few leafy vegetables and a very small allotment of nuts three times a week have been instrumental in her progress. Her progress might have been more rapid except for the fact that this client had a tendency (as many do) to regress and, at such times, her commonsense and new knowledge fell victim to habit and she would indulge in the old ways. Fortunately, as time went on, the periods of regression became fewer although even yet they occasionally reassert themselves. We are confident that the day will come when she will have much improved digestive and eliminative powers although it is doubtful that she will experience full recovery since her colon and other organs have been extensively damaged both structurally and functionally, although we must emphasize that we should never shortchange nature. She can often surprise even the most experienced practitioner!

If we are presently not eating an all raw food diet, it would seem, from this discussion, the better procedure to change as quickly as possible to this more healthful way of eating. The body will then respond favorably and total well-being will be the result.

Every food intended for man has its required proportion of largely indigestible cellulose fiber. It is important that we consume our food in its natural state and not cooked, juiced or blended. Dr. Vetrano explains that, "If the food is whole—unjuiced, unblended and uncooked—like wild animals take their food, it will occasion the flow of more digestive juices than if the food has been separated from its fiber content or if the fiber has been excessively macerated. When the natural fiber touches the walls of the

stomach, it occasions much more gastric secretion than were it in the form of juice or in the form of a blend."

Dr. Vetrano further states that such practices as cooking, blending or juicing affects the fiber content which is necessary for the proper movement of food through the digestive canal and for the stimulation of the secretion of normal digestive enzymes.

However, we must keep in mind that it is not the fiber alone which ensures health of the digestive canal. It is a proper diet combined with all of the other aspects of a Hygienic lifestyle which will result in health of the entire body and all of its functions, including digestion. By following all of the principles of Life Science, the body will be free from toxic overloads which result in constipation and other disorders.

2.6 Cooking and the Minerals

There are many factors that alter and destroy the mineral presence in foods. One of the most destructive of the various processes which precede the actual cooking process itself is the paring and cutting of foods. In many foods, especially the fruits, the greatest concentration of minerals is found in the skin or peel and these are often totally discarded when foods are peeled as, for example, apples or the tuber, the potato. Some foods have high concentrations of minerals stored directly *under* the skin and these, too, are often removed in peeling. There are foods, of course, which must be peeled before eating, such as the banana and many citrus fruits. All nuts require shelling. However, in considering the foods best adapted to man, by far the greatest number can be consumed whole and require no peeling whatsoever.

The cutting, shredding, chopping, etc., of foods prior to cooking exposes a larger surface to mineral loss and, if foods must be cooked for one reason or another (for example, in very debilitated cases), then it would appear best to cook as many foods as possible whole in order to minimize such loss.

Boiling is the poorest method of all. it is highly destructive of minerals. One can illustrate this fact very easily. Place some carrots or other deep yellow or deep green vegetable in a pan. Add water to cover and bring to a boil. Boil for two or three minutes and then decant the liquid. The water will appear colored, either yellow or green, indicating that many nutrients including the minerals have been dissolved in the liquid and are no longer contained in the food being cooked. The mineral loss will, of course, be greater when the foods have been cut prior to placing them in the water for cooking. According to the *Journal of Home Economics*, Vol. 17, No. 5, the average loss by boiling in foods is:

Iron	48%
Calcium	31.9%
Phosphorus	46.4%
Magnesium	44.7%
From the potato, total loss	50%
From the cabbage, total loss	40%
From the Carrot, total loss	30%
From the apple, lost by peeling, boiling and	50%

2.7 Demineralization Processes

Dr. Shelton tells us that mineral loss from foods by cooking is accomplished by the following means:

1. By Leaching: the minerals are carried out in the food's own juices which then run out into the surrounding liquid.
2. By Volatilization or Evaporation: Certain minerals, iodine and sulphur being prime examples, will "bubble out" from certain foods upon the application of heat. In the process of pasteurization of milk, the loss of iodine can amount to as much as twenty percent. Any time a person can smell cooking odors, he knows that nutrients are being lost.
3. Chemical Alteration: Certain mineral salts contained in foods are changed chemically by the application of heat, so much so, in fact, that they become biologically unavailable to the body. Pasteurization of milk, for example, changes the calcium in milk from its organic form to an inorganic molecule which is completely useless to the human economy.. In the green leaves of plants, in fresh ripe fruits, in the edible nuts and seeds are found all the minerals deemed necessary to preserve health and to extend life in health. It must be understood, however, their usefulness does not depend solely on the presence of a sufficient quantity and variety of minerals alone, even though all, other nutrients are also present; but, largely upon the proportion of all these vital nutrients to one another and, most particularly to the presence of the organic mineral molecules and to the ratio between the acid carrier elements and the alkaline mineral elements. We refer, of course, to the acid-alkaline balance. With the unavoidable mineral loss that ensues whenever food is cooked, the possibility exists that this balance can be disturbed so much that an acid-alkaline imbalance will result (acidosis or toxicosis).

2.8 The Mineral Presence

Mineral elements comprise less than five percent of our body and only about one percent of the weight of cellular protoplasm. However, minerals are essential to all metabolic activities. Their presence is required to sustain the alkalinity of body fluids; they are required for structure, in healing and for repair.

Our body requires a great variety of minerals, some more, some less. Some of the more common elements like carbon and hydrogen are plentifully supplied by fruits and vegetables; others like potassium, sodium, magnesium, and other alkaline mineral elements required to maintain fluid alkalinity and salinity are found liberally in fresh leafy green vegetables. In our view, these latter foods should comprise an important part of the dietary intake. The important micro-elements, the so-called trace minerals, including iodine, chromium, zinc, molybdenum, manganese, copper, vanadium, fluorine, selenium, and so on, are also required but in unknown amounts. These trace elements are required to feed the body's cellular factory production line and to participate in the thousands of actions and reactions that are going on. We require a full assortment of all required minerals to keep us breathing, growing, regenerating, healing; to keep us alive. The dynamic importance of minerals to health is not always appreciated and probably few among us receive our full quota of minerals nor do we receive the ones we get in their original proportionate distribution simply because most people eat largely of cooked food.

Many sick people improve dramatically when they change from the ordinary mixed diet to the vegetarian fare, even though cooked, but when they change to an all raw food intake, they are often amazed at the dramatic results obtained by them within a very short time. It is not only important to know where the food you eat originates but it is even more important to eat that food unfired, replete with all its minerals in their correct proportionate arrangements and combinations prepared expressly for human physiological machinery in nature's grand plant factories.

Mineral deficiencies and imbalances produced by poor food selection and by cooking can lead to many disorders: to general malnutrition, increased sterility, development of homosexual tendencies, body encumbrances of many kinds, concretions, skin moles, blemishes, general debility and weakness, as well as to other diseased conditions.

2.9 Fragmented Foods

Fragmented foods are foods in which certain nutrients are in short supply. To ensure superb health throughout a lifetime, food must contain all the nutrients required for the living process and these elements must be furnished in organic combinations and in certain prescribed arrangements as they have been formulated in natural foods. Life cannot be maintained for long on fragmented foods. Cooking fragments food because, among other things, it disrupts the mineral presence, throwing it out of balance.

Organized by nature, iron, phosphorus, potassium, magnesium, sodium, potassium and all the other minerals contained within the highly organized molecules of foods can be digested, absorbed, transported and assimilated with highly beneficial results. Cooked, fragmented, demineralized or mineral-poor foods create problems for the digestive process, problems which lead to imperfect processing all along the nutritive chain. A life sustained on cooked mineral-poor food will be plagued from time to time by both minor and chronic diseases; such a life will experience varying amounts of weariness, fatigue, a lack of endurance and strength and will be shortened commensurately with the existing mineral deficit.

A diet rich in its mineral content, unfragmented by cooking, on the other hand, means smaller quantities of food must be eaten, fewer waste products with quicker elimination, improved endurance, greater strength, the maintenance of a proper blood viscosity and alkalinity, clean fluid channels, together with excellent general health, both physical and mental.

As Life Scientists we must understand that no proximate food factor alone is capable of sustaining vital force and further than this, that fragmented foods, even though they may contain many or even most of the required nutrients, are also incapable of sustaining life without creating deficiencies which, in the final analysis, are destructive of some measure of health. When we choose mineral-rich foods and then eat them uncooked, masticating the foods well, we then will provide our body with the best raw materials to produce healthy cells and tissues. We can eat twice the quantity of cooked fragmented food and yet not obtain an equivalent amount of biologically available mineral wealth nor can we be sure to obtain our full requirement thereof.

2.10 Cooking and Enzymes

Perhaps the greatest argument against the practice of cooking lies in the fact that heating any food above approximately 122 degrees Fahrenheit destroys the food enzymes. Water boils at 212° so we can readily see that even the application of comparatively low heat can destroy the enzymes.

Enzymes present in fruits and vegetables play a vital role in the metabolic activity of the plant cells. They are complex proteins formulated in and by the plant cells from primary inorganic elements soluble in water and taken up by the roots of the plants and by the combined action of sun and air they become incorporated into the cellular plant community.

Like all other proteins contained in foods, the chemical structure of the complex enzyme molecules is changed by the application of heat and the catalytic force destroyed. Cooking will kill food enzymes just as effectively as an excessively high body temperature will cause us to burn up. Heating food effectively stops the vegetable metabolic action. In other words, when heat is applied to a plant in excess of 122°, the life force of the plant comes to an abrupt end.

When raw food is eaten, the food enzymes remain intact. Just like the protein in the food, the enzymes are digested in the stomach and become a part of the nutritive package offered up by the particular food,

fruit or vegetable, nut or seed. Humans have the ability to manufacture their own cellular enzymes from the nutrients transported to the cells in the fluids of the body. Thus, if we supply ourselves with adequate amounts of suitable kinds of raw foods we will more easily and thoroughly digest our food, we will absorb a goodly quantity of nutrients to supply cellular needs and we can then formulate the required human enzymes, as the need arises.

However, when we eat cooked food we then fail to supply the wherewithal to manufacture our own enzymes and, if we remember that enzymes activate and control all the chemical actions and reactions within the cells and regulate the energy output for all physical and mental activity, we can see just how important the enzyme presence is to the continuance of life.

Adjustment by the body to the eating of cooked enzyme-poor food is always done at the expense of vitality, endurance and strength. However, many persons are afraid they will lose much weight on an all raw diet. This is generally true, but only in the early stages as the impurities in the blood and cells leave. After the housecleaning has been well taken care of, the lost weight is usually regained in short order. John Richter, author of *Nature—The Healer*, found this to be true. In fact, like most people, he first lost considerable weight and then regained all he had lost plus a few additional pounds. In the process, he regained his health, reporting in at 84 years of age to be totally without aches and pains of any kind.

Earlier in this century a wrestler, by the name of George Hackenschmidt known as the Russian Lion, toured the world competing with all the great iron men of the day. He successfully threw all who dared to test his strength and skill. According to Dr. George R. Clements, his diet consisted of the following:

Breakfast: lettuce and 5 or 6 Brazil nuts.

Second Meal: fresh raw fruits

Third Meal: fresh uncooked vegetables.

Dr. Robert, who eats only very occasionally of any cooked food, went from 212 pounds down to about 108 pounds and then began to add on weight until he reached about 128 pounds, where he has remained now for many years. We might point out that the new flesh gained is good firm, much-healthier flesh, and the weight obtained will be in keeping with body structure. On a hygienic regimen complete in all particulars, including a totally raw food intake, both the obese and the underweight tend to return to a healthy weight, normal for them.

Enzymes are the life principle and when they are lacking, their absence will soon be felt. When our food is vital, our bodies respond and we also become more vital. The destruction of enzymes by the application of heat may result in toxicosis and digestion is thus delayed or incomplete. In any event, we have long known that animals fed solely on a diet consisting of cooked food soon sicken and die while those fed their natural food and uncooked, thrive generation after generation. It may be well that the unique talent of enzymes to catalyze chemical reactions at low temperatures serves to conserve body energy and time not only in the cells but also in the digestive tract itself. Certainly the enzymes servicing the alimentary canal act in this capacity.

2.11 Cooking and Proteins

Every step taken to prepare foods for cooking and also the actual cooking process itself produces changes in the nutritive value of the food. Protein content and value is no exception for it, too, is affected profoundly by the application of heat.

As the student has already learned, the protein molecules are very complex, so complex that they are known as "macromolecules." When these macromolecules are subjected to heat, they are chemically changed, becoming less digestible in most instances. Egg white is an exception. The albumin in egg white is indigestible raw and quite indigestible when completely hardened as in hard boiled eggs. However, when slightly curdled as in poached and very softly boiled eggs, the egg white is most digestible.

Meat protein undergoes important changes beginning at about 147 degrees in some instances as with fish, for example. If one is frying fish, one can observe a "leakage" of fluid begin at just about that temperature and, by the time a temperature of 151 degrees Fahrenheit has been reached, the pan will evidence considerable fluid in it and the texture of the fish will have changed having become quite dry and also less digestible, the protein having been coagulated and rendered less soluble, the water having been removed by the increased temperatures.

Beef and lamb are more easily digested raw than when cooked.

With these two meats the protein starts to harden at temperatures above about 150 degrees and at 160 degrees has been hardened. One time we were the only passengers on board a Dutch freighter which we had boarded in the harbor at Marseilles for a trip across the Atlantic where we were to study eating habits among the island people in the Caribbean. We ate with the captain and officers and observed that the meats served were cooked only to a depth of about one-quarter inch with the rest of the meat, usually beef, oozing blood. Many cultures in Europe we found eat lightly of meat, serving it mainly in very small portions and well cooked, as in various stews, but the Dutch, apparently like their meat in large quantities and almost uncooked. The only meats we observed being well cooked on that voyage were bacon and sausage.

If one examines a typical protein molecule as might be found in animal protein, one can observe various NH_3 groupings, the N indicating nitrogen, the H, hydrogen. These are known as amines. In cooking and especially in the presence of water, these amines are replaced by an hydroxyl grouping, that is by an OH group, the O being the symbol for oxygen. These OH groupings cannot again be replaced by NH_3 by any mechanisms present in the human body. This is why the cooked protein becomes useless. In some methods of cooking, it is believed that certain amine groups are actually split off even though no water is used in the cooking.

Certain proteins contain sulphur in their molecules. In the presence of water, this sulphur can also be split off. Cystine, an important amino acid which contains some 27 percent sulphur, is a typical example. Sulphur is found in all members of the cabbage family and it plays an important role in the human body as a disinfecting agent. The student will observe that in cooking members of the cabbage family, one can often be aware of the smell of sulphur as gases leave the cooking utensil. What is left is an inorganic molecule made up of inorganic atoms, which are useless to the economy. Cystine is an important element in the formation of red blood corpuscles but not a desulphurized changed cystine, but the whole organic molecule.

The vital factors, the complete amino acids, are destroyed and rendered useless as food factors to the precise extent that they are destroyed by the heating process. Methionine, another important sulphur-containing amino acid, is similarly affected by cooking. This amino acid is an important constituent of the body serum, of hemoglobin and of tissues. We can see how cooking such methionine-containing foods as Brussels sprouts, cabbage, cauliflower, kale, pineapple, apples and Brazil nuts could render their constructive values almost useless.

Similar modifications in structure occur with all the amino acids in cooked proteins, essential and nonessential. When we consider the vast complexity of these molecules, we can appreciate perhaps more fully the value of retaining the original organic structure. It is difficult, if not impossible, for the human body to build its own protein if it must first untangle an inorganic mess even before it starts.

Ragnar Berg, the Swedish scientist, reported long ago on research that showed that boiling meat even for a comparatively short time changed the nature of the phosphate presence in protein. Phosphorus is essential to blood and brain building. And yet, how often are the following valuable foods cooked, valuable because they contain generous amounts of phosphorus in them: kale, asparagus, Brussels sprouts, Savoy cabbage, carrots, cauliflower, cucumbers, lettuce, Brazil nuts, walnuts, huckleberries, blackberries, cherries and black mission figs. Many of these same foods contain iodine which, on heating, is also changed to HI or hydriotic acid causing damage to the thyroxine presence.

It is interesting in this respect to note the recent release by an "expert" panel of the National Academy of Sciences (as reported in the public press on June 17, 1982) in which, for the first time, it is acknowledged that a faulty diet is related to cancer. The panel urged people to increase their consumption of fruits and vegetables and especially of members of the cabbage family, such as broccoli, cauliflower, kale and brussels sprouts which "contain natural cancer-inhibiting substances."

Could these perhaps be the sulphur in the amino acids which are destroyed by the cooking process? Perhaps for the first time this official body has also recognized the importance of an adequate vitamin intake, emphasizing the vitamin C contained in dark-green leafy vegetables and deep yellow fruits and vegetables. As Life Scientists we, of course, know that cancer represents the end-point of a long and involved biological evolution, one made operational by a multitudinous number of physiological insults, a faulty diet being one.

The more the complex molecules of protein are heated, the more changed is the colloid form. The water-containing colloids (called hydrophilic) are converted into water-reduced colloids (hydrophobic). Unfortunately, perhaps, the human liver is designed to accomodate only hydrophilic colloids. After hydrophilic protein colloids are processed by the liver, the waste products can be neutralized very handily by the sodium stored in the liver for just such a purpose and then can be flushed out as sodium salts, carried out of the body via the bile and feces. The kidneys take on the remaining nitrogen wastes which are flushed out in the urine as soluble urea.

Heating proteins, because it alters the protein molecules, makes them more subject to putrefaction in the intestines, a decaying process which, over the years, can lead to grave disorders of many different kinds according to inherited individual strengths and weaknesses and, of course, to the general overall profile of the individual, both as to his eating habits, past and present, and to his lifestyle, past and present. Past indulgences must have left their imprint.

Dr. Kouchakoff discovered that cooked meat causes a tremendous proliferation of white blood cells in the bloodstream, the increase being two to four times the normal. The body produces these white blood cells for a purpose: they surround toxic particles and then escort them to the nearest exit point, usually the kidneys. We note and it is so recognized that leukemia is always associated with an extremely high uric acid reading in the blood.

In all likelihood, other components than protein are also affected and reduced to a lower inorganic state, less useful to the cellular community. We have already noted a few. The experiments performed on cats by F.M. Pottenger, M.D. and D.G. Simonsen at Yale are well known but deserve repeating here to emphasize the harm cooking can do to proteins so essential to growth, building, healing and repair. In these experiments the cats were divided into two groups. The group that received all uncooked food lead normal lives and remained healthy through several generations, in fact until the termination of the experiment. The other group, fed only on cooked food, rapidly failed in health and members of the second and third generations lost all ability to reproduce. The members of this group suffered from diverse diseases including "softening of the bones, paralysis of the legs, thyroid abscesses, convulsions, cyanosis of the liver and kidneys, an enlarged colon, degeneration of the motor nerve ganglion cells throughout the spinal cord and brain stem, with some cells even affected in the cerebellum and cerebral cortex." Do we not observe similar conditions among our friends and neighbors who eat consistently of cooked foods? Certainly, we are observing considerable deviation from normal sex habits among both sexes and among women, especially a departure from biologically normal female instincts (some lessening in devotion to the raising and protection of the young they have brought into the world, and increased lack of desire to bear children, promiscuity, and so on). An increased number of males fail to provide for their offspring. Many of both sexes have become either homosexuals or sterile. While other influences are no doubt causative here we cannot but help believe that the evidence of the cat experiments points an accusing finger at the tendency to emphasize cooked food almost exclusively in our dietary habits. Because of the high temperatures, cooking by boiling, frying and by pressure cooker are particularly destructive of the important amino acid molecules.

It takes many generations to affect conclusive, results— two to four in the cat experiments. The human race has been eating cooked food now for a long time and in increasing amounts. We are no doubt witnessing the evil effects of this practice and are apparently helpless to stem the tide of disease among our peoples. Someone has well remarked that it is the uncooked molecules in the food we eat that maintains life. The only hopeful thing we see at the present time is the growing interest in sports and the interest many of our young people express in the study of nutrition, especially in natural hygiene.

2.12 Cooking and Fats

Cooking fat-containing foods renders the fat and the foods less digestible and, in some cases, even highly toxic. Foods fried or cooked in fat and all foods with a high-fat content are more or less difficult to digest depending on the quantity of fat present and the temperature at which it is cooked. The free use of fat, cooked or uncooked, encourages digestive disorders mainly because its digestion must wait until it passes out of the stomach. The fat, when mixed with other foods, has a tendency to form a coating over the other food particles and the digestive juices and enzymes have difficulty penetrating this coating. This difficulty is augmented when the fat has been heated. Additionally, the fat coats the lining of the digestive tract impeding free secretion of digestive juices. But, that is not the end of our difficulty with fat. The fat will form around the individual complex food molecules preventing resolution into smaller elements; in other words getting in the way of the necessary chemical separations. Putrefaction of protein substances and fermentation of carbohydrate molecules are a natural sequence.

Fats, as found normally in nature's food packages, need not be avoided but, even here, one can overindulge as many do, eating too many avocados and snacking on nuts at all hours. It seems that many hygienists are guilty of the last. They do not seem to understand that every time we put anything into the oral cavity, we put the wheels of digestion, absorption, transportation and assimilation into motion, we activate every organ and system in the body and waste our vital reserves by so doing.

The application of heat to fats breaks them down chemically into fatty acids which are nonassimilable and, consequently, these become free-floating poisons in the body fluids. Experiments on animals have shown heated fats to be carcinogenic to the animals. As Life Scientists we know that cancer is an end-point reached after many indiscretions, and is not caused by a single isolated factor. However, we also know that fats (triglycerides) are responsible for body balance of the metabolic processes working with the nervous system. High triglyceride count slows the utilization of minerals causing excess mineral build-up and depression of the nervous system communication capabilities, a state certainly capable of confusing the entire system's operational accuracy.

In September 1976, the Washington Post reported on the dangers of increased fat intake and especially of cooked fat, as shown by the research of an Australian scientist, E. Bruce K. Armstrong of Perth Medical Centre. It was reported that women eating diets rich in fat and especially in animal fats apparently showed an increased risk of developing womb cancer, often localized in the lining of the uterus. This was of great interest in the U.S. since the incidence of this kind of cancer among women was shown in 1975 to be the highest among 23 countries. Our daily fat consumption at that time was fourth, and, as students well know, most of this fat was cooked fat.

Armstrong also cited studies that showed a close correlation among endometrial cancer and breast cancer and colon cancer, both of these last cancers being suspected of having a cause-effect relationship with fat consumption. Armstrong cited studies dating back to 1958 linking obesity to endometrial cancer, but emphasized a 1973 report which suggested that dietary fat displays larger role than sugars and starch in causing this disease.

In a 1975 survey of 23 countries, it was shown that the per person daily consumption of fat was listed at about 150 grams in the U.S., compared with about 40 grams in Japan and Nigeria. The rate of endometrial cancer in women was 34 per 100,000 in the U.S. and only about 5 per 100,000 in these two countries. Certainly these studies seem to support the conclusion that excess fat consumption, and especially cooked fat, may well be one of the causative factors which, added to multitudinous other

physiological insults, can lead to the biological evolution which terminates in cancer.

A number of witnesses before the Senate Select Committee on Human Nutrition and Needs have testified to the epidemiological evidence correlating dietary imbalances to increased cancer incidence and most, if not all, have pointed an accusatory finger at excess fat which is heated fat. We have also observed in this lesson that heating food disturbs and, in some cases, destroys minerals, vitamins and enzymes, creating imbalances not only in the food but in the person who eats that food.

Dr. Gio B. Gori, deputy director of the National Institute of Health's Division of Cancer Cause and Prevention, told the Committee, "The role of nutrition in human disease is obvious, and no other field of research seems to hold better promise for the prevention and control of cancer and other illness, and for securing and maintaining human health." As Life Scientists, surely we can say, "It's about time!"

Certainly we cannot long have a viable nation when its children and adults eat a diet well laced with cooked carcinogenic free-floating fatty acids. Dr. Gori said that there is a need to reduce the intake of foods rich in fats and specifically named meats and milk. Few people eat uncooked meat and most drink liberally of pasteurized milk (heated) which has a relatively high cooked fat content.

A report of the Worldwatch Institute, a Washington-based research group, states that "those with an affluent diet consume large amounts of animal proteins and fats in the form of meats and dairy products...and increasingly, they choose commercially manufactured foods over fresh, unprocessed products." It is well known that many of the commercially manufactured products are subjected to high temperatures destroying the normal fat content and rendering it less digestible. It is interesting to know that the fat-heavy American lifestyle is rapidly replacing the former heavy grain-potato-fruit-oriented diets of the countries throughout the world. In our earlier trips to Europe we became familiar with the small family-oriented markets with their beautiful displays of fruits and vegetables brought in early in the morning from the surrounding nearby farms and orchards. On more recent trips both to Europe and "down under" we have noticed fewer and fewer of these markets. They have been supplanted by supermarkets, a la U.S. style. These brightly lighted and beautifully appointed showplaces display a greatly augmented array of meats and the familiar over-processed devitalized foods so common in the American dietary. As our dietary practices expand so do the world's ills. Life Scientists should remember that fats are the most difficult of foods for the body to digest and they become even more dangerous when heated. Those persons who eat excessively of fats and especially of cooked fats, as in barbecuing and deep frying, place themselves in a hazardous position exposing themselves, as they do, to certain known carcinogens. We should eat as little fat as possible remembering that fat contains twice the food value by weight of all other types of food and, additionally, makes one vulnerable specifically to cancers of the uterus, breasts and prostate gland—in males.

The National Academy of Sciences has also noted that, in those countries where consumption is high of such foods as smoked sausages and fish, ham, bacon, frankfurters and bologna to name a few, that cancers of the digestive tract are also common. All of these products (we cannot call them food) are high in fat content and all are eaten after being subjected to heat. The presence of certain additives in most if not all of these same foods, such as nitrates and nitrites, with the subsequent formation of nitrosamines and polycyclic hydrocarbons, only adds to the health hazard of the fat.

And finally: we need so little fat! Just enough to pad and protect us. When and if we require additional fat, our amazing bodies can synthesize it from carbohydrates and proteins. Nature puts very little fat in man's perfect food, fruits, and that should certainly tell us something!

2.13 Cooking and Carbohydrates

Carbohydrates are no exception. Cooking renders all starches indigestible. It was long believed and still is by most people, that cooking renders starches more digestible. The ability to digest starch thoroughly depends on the general digestive health of the individual. One person will experience no difficulty in digesting starch, cooked or uncooked, while another, with less digestive power, will be able perhaps to

digest cooked starch but will suffer from gas if he eats raw starch, due to fermentation of a residue of undigested starch.

Some scientists have maintained that cooking changes starch to dextrin and, since dextrin is easier to digest than the more complex molecules of starch, this was the rationale behind the assumption that cooking would render starch more digestible. True, starch will be converted and if it is maintained for a sufficiently long time. In ordinary cooking, only a very small percentage is so changed. Additionally, when we attempt to dextrinize food starch prior to eating, we interfere with the salivary amylase which normally acts in the resolution of starch. If starch foods are boiled and become saturated with water, the enzyme ptyalin, the active enzyme in saliva, will be powerless to affect any change from the poly to the disaccharide formulation, certainly a circumstance that will almost ensure fermentation along the alimentary canal, with the formation of such products as carbon dioxide gas, various alcohols and acetic acid (vinegar).

Eating cooked food causes persons not to masticate their food thoroughly. It is moist, giving the impression that it should be swallowed. The imperfect and short mastication time interferes with the digestive process along the entire alimentary canal due to the fact that the nerve communication channels are not kept open long enough to permit the inner stage to be pre-set in the three digestive departments in a correct arrangement before the arrival of the food requiring digestion.

On the other hand, the thorough chewing of food, and especially of starch food, gives sufficient time for message transmission and for adequate secretion of both enzymes and juices prior to the time of arrival of the food, resulting therefore in a more thorough resolution of the starch into primary molecules.

As a sidelight of interest here we might note that raw cabbage digests in two hours whereas it requires four hours if cooked. Most persons can eat raw cabbage, but few can eat cooked cabbage without experiencing distressing symptoms. We can note also an unnecessary energy drain on the system due to the extended time required for thorough digestion. If we desire health, we have to avoid such unnecessary energy loss.

Toasting and baking "to a nice brown color" forms charcoal (carbon) as well as other harmful products contained in the baking foods. Such products have been shown to have less food value overall than the soggy inside portions which have not been subjected to the high temperatures required to produce that nice brown color.

Phosphorus acts as a carrier to transport digested carbohydrates to the liver for conversion to glycogen which then can be stored both in the liver and in the muscle tissues for use in emergency situations. Adjustment of a proper intestinal pH to a rather strong alkaline balance is necessary for thorough and a more complete digestion of complex carbohydrates such as starch. The change in composition of the molecules after heating necessitates a different pH in a number of cases, not always possible for the organism to provide. Very high temperatures are required to change most sugars but the sugar in milk is changed in the process of pasteurization and is rendered less valuable, even though the heating temperature is relatively low.

2.14 Some Specifics

Cooked starches are difficult to digest primarily due to the hydrolysis of the starch in the cooking process. The hydrolyzed starch is subject to easy fermentation giving rise to the formation of acetic acid (vinegar) and the other byproducts already mentioned. One of the harmful effects of acetic acid is that it has a tendency to leach out the body's phosphorus and to stimulate the thyroid gland. As we have previously observed in Lesson 39, there is an intimate relationship among all the members of the endocrine system so it is not a surprise to learn that, as the phosphorus becomes depleted, the performance of the adrenal glands becomes less perfect since phosphorus is one of the active components of the adrenaline hormonal secretion. Thus, we have dysfunction of both the thyroid and the adrenals and, no doubt, of other hormone-secreting glands.

It is little wonder that those persons who depend for a large measure of their substance on cooked starches so often experience headaches, throat congestion, mucous expectoration, pains in the heart, sour eructations, body odor, frequent chill and rapid pulse. It can most surely be said that such a diet, if long continued, will lead inevitably to hyperthyroidism and hyperadrenalism.

2.15 Cooking and Baby Formulas

Oliver Wendell Holmes once said that "a pair of substantial mammary glands has the advantage over the two hemispheres of the most learned professor's brain, in the art of compounding a nutritious fluid for infants." Nature has provided an infant with an intestinal tract which will mature as the infant grows. This maturing process is a slow evolutionary process and, during the growing and maturing years, the diet must be fitted to the equipment provided and not the other way around!

At no time in the progress from birth to childhood to puberty to adulthood are the digestive organs designed to handle cooked food. The stools of an infant fed on the milk provided by a healthy mother will be soft, nonirritating, easily defecated and sweet-smelling. The stools of the young child, of the young lad or young woman and of the adult will remain always in the same, much-to-be-desired state indicating healthfulness when the constant fare is uncooked, well chosen, properly combined and eaten according to need. Why? Because we have the equipment within us to properly process food designed for the human body and also the equipment to dispose of normal metabolic wastes. It is only when we depart from the ways of body correctness that we begin to suffer from the effects of our departure and in a precise relationship to such departure. Anything cooked has changed in its chemical composition, its nutritive values have been deranged and the products of such change and derangement brought about by heat or by any other abnormal method, practice or substance, are always pathogenic. Cooking of the food supplied to an infant begins the wholesale destruction of health from the very first moment that food is eaten.

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3. Consequences

A high-protein diet plus overeating plus bad food combinations plus cooked foods plus animal fats, all cooked, of course, will always result in poor digestion, absorption, transportation, and assimilation. Such practices will result in excessive mucus, thickening of blood vessels and of the fluids, derangement of the lymph and blood fluids as, for example, an increase in viscosity (thickening), formation of plaques in the blood and concretions (accumulations of precipitated overload, as of uric acid, for example anywhere they may be dumped to get them out of the way, as in a joint); plus a host of other annoying and dangerous symptoms of systemic poisoning. All such derangements tend to alter homeostasis within the body.

We are not by design fat eaters, as we have said. The human body will meet most of its fat needs by synthesizing its own body fat from the sugars supplied by fruits. Remember that fat is composed of carbon, hydrogen and oxygen. Fruits contain exactly these same elements only in a different arrangement. The human body has the ability by means of catalytic enzymatic action to disorganize the sugars of fruits and then rearrange the released elements into the kind of fat which will suit its own specific needs at the moment. Fat taken as either an oil or as a solid fat presents problems at all levels and especially when it has been cooked. This kind of fat really just passes on through the stomach because that organ just can't process it. Fat is even very difficult for the intestines to manage, it is difficult to absorb and once it arrives at the liver, fat becomes a major concern to that organ, too.

Consider, in contrast, the sugar trip: almost no digestion required in either the mouth or stomach (it is all pre-digested and in a travelling molecular formulation), it is quickly absorbed because the molecular structure just fits into the membranous passage mechanisms and it passes easily through the cells lining the alimentary canal, it is greeted cheerfully by the liver which rejoices in a 90 percent gain of energy after fully discounting the energy loss of digestion, appropriation and assimilation and the transportation, and so proceeds happily to convert the sugars into glycogen for storage or to make the glucose available for the maintenance of body temperature and energy; and, if required, to restructure the primary elements into body fat. Thus, uncooked sugar-rich fruits are welcomed by the body while fats, cooked and uncooked, yield few, if any benefits to the organic domain.

3.1 Cooking, the Teeth, the Mouth, and a Forever-Young Face!

There are two main considerations here, namely: the effect of heat upon the enamel of the teeth and secondly, the effect of poor mastication on the mouth and facial muscles.

The enamel on the teeth is a species of organic crystallization. It is by far the hardest substance in the human body, made by a precise magnesium-calcium arrangement. However, this crystallized material can be rudely cracked with hairline invisible fractures in the process of masticating very hot foods. These hairline fractures in time develop into dental caries. This may well be a significant cause of the high incidence of dental caries in this country, in excess of 98 percent even in children and almost 100 percent among adults, few of whom retain their full quota of teeth after the age of fifty, with many wearing dentures. Diminished health inevitably follows after the loss of teeth.

As to the second effect evidenced by poor mastication: cooking food encourages a person to masticate his food too little, to swallow it too fast, and to eat too much, all effects which have serious implications with regard not only to the health of the digestive apparatus because it is not well exercised and/or properly cleansed, but also to the general health of the entire body due to improper nourishment; but also to the health of the teeth.

When raw foods are eaten and eaten in their natural state (that is, unchopped, unshredded, and so on), the teeth are required to perform their full function and, as they regularly and dutifully perform, they are strengthened, just like any other exercised tissue, organ, or part. If they are not used properly, the teeth will weaken just as any other unexercised tissue, organ or part will weaken. Graham (Sylvester Graham, "Lectures") makes note, of the fact that if we become accustomed to masticating food only on one side of the mouth and do not make use of the teeth on the other side, within a very few years the unused teeth will begin to decay and the gums will become tender and, in time, a certain number of the unused teeth will be lost, while the teeth on the other side where chewing is performed consistently will remain sound.

Uncooked food, in contrast to cooked food, requires thorough mastication, especially when it is eaten without drinking any liquid during the mastication process (as it should be). Eating raw foods helps to cleanse the teeth and will tend to maintain a high level of dental health; but, not only sound dental health, but also the health of the mouth itself because full mastication of raw foods requires vigorous muscular exercise of all parts of the mouth including the tongue and all lymphatic tissues.

Whatever disturbs the function and causes a general irritability of the nervous system will lessen not only the health of the teeth, but also the health of the entire mouth. Insufficient mastication over the years gradually brings about a diminution of secretive ability. Saliva production falters as does enzyme production with a resulting lessening in the ability to process carbohydrates in the initial first stages so important to their complete digestion. If food is cooked to the soft, pulpy stage and is then consumed hot, tartar begins to build up on the teeth. The gums soon become soft, losing their tonus. The mucous membranes and muscle tissues of the mouth remain poorly exercised because all cooked food is so easily swallowed and people are deceived into thinking it is ready for the stomach, if they think about it at all. This imperfect mastication and insalivation obviously creates chemical and physical problems for the stomach and, indeed for the entire alimentary canal.

Muscles that are not well and consistently exercised become flaccid, limp and, if not exercised at all for a sufficiently long period of time, even atrophied. Many people today have wrinkled faces largely because they eat of so much devitalized cooked foods which they swallow so easily after insufficient mastication. Thus, they rarely, if ever, sufficiently exercise these facial muscles. About the only exercise they get is when the individual speaks and even then, the exercise is very limited and for too short a time to be of much benefit.

But, to the contrary, watch a true Life Scientist at his meals. He chews and chews and chews while all the while the saliva pours out, the teeth are cleansed and the gums, membranes and facial muscles participate fully and, in the doing, retain their elasticity and tonus, remaining forever young and wrinkle-free. Life Scientists do not require creams or lotions for facial plasticity nor face lifts to give the illusion of youth.

3.2 Overeating

Eating cooked emasculated foods leads to overeating simply because a large quantity must be consumed to satisfy the system's overall nutritive requirements even though this is rarely accomplished in all particulars. Consequently most people who eat of cooked food are actually burdening their stomachs and other organs with three or four times more food than would be required to supply the same amount, if not more, of nutritive factors if uncooked foods were eaten and these in a more appropriable form. It is our belief that this one fact alone serves to drain the vital force reserves as the years go by because the mere quantity of food consumed requires energy and reserves for a time-consuming and more difficult digestion to take place, energy which might better be conserved and held in reserve for an extension of the life span. It is little wonder that drained energy reserves cause man's vitality to decline noticeably at forty and that only a handful of those persons who began life are still around at 70 when they should be perfectly capable of living heartily and in health probably far in excess of 100 years.

As Life Scientists we need to be aware of the fact that the usual food intake is not an index to the normal needs of the body, but rather to "the morbid cravings of a perverted appetite. The quantity of food consumed...is by no means a safe indication of the physiological requirements of the body...Civilized man lives to eat instead of eating to live...until after years of overindulgence, they find themselves in the grip of chronic disease.

Almost all students of this subject are in agreement that man has always had a tendency to overeat and that this tendency is, beyond all question, decidedly the greatest source of disease and suffering and untimely death to man. Even if we eat wholly of uncooked natural food, we must guard continually against this tendency. Countless numbers of experiments have proved, beyond a shadow of a doubt, that eating a minimum of food to satisfy systemic needs is a life-extender while eating in excess is a life and health destroyer.

Even if we eat wholly of uncooked natural food, we must guard continually against this common tendency, but obviously the danger is vastly augmented when an individual overeats on damaged food, food that has been cooked, its vital elements altered. Then, we break down, wear out and prematurely age all our organs and systems; our muscles stiffen, our bones become brittle and we begin to look curved, bent, wrinkled and old.

3.3 But I Like To Eat Some Cooked Food!

Well, we tell our clients, "It's your choice!" We know that a high degree of heat applied to food for any length of time will greatly reduce its nutritive value. There is no argument here. We must decide if we will settle for less when optimum is best.

Not all of the value of food will be destroyed especially at lower temperatures. If cooking is done in a restrained fashion at lower temperatures and for only a brief period of time, so that the organic salts and other nutrients are not totally destroyed, there will then be no great harm in eating some cooked foods

occasionally, but let us be fully aware of the fact that when we do eat cooked food we will not be eating ideally nor will be providing optimum nutrient values to ourselves. We must remember that the quality of our body depends on the quality of the food we eat and upon how we eat it and, very importantly, on our restraint in eating.

Almost all artificial food preparation methods create a situation wherein we have a superabundance of one constituent or another, or else some are absent altogether or are present in too insufficient a quantity. The living organism always abhors an imbalance and reacts adversely to it, most often in the form of some diseased state in an effort to protect the integrity (the life) of the individual. Only uncooked plants, perfectly fresh and unspoiled, can provide the correct balance of known and unknown food factors to maintain perfect health. All wisdom dictates that eating any amount of cooked food represents a fool's paradise.

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4. Questions & Answers

I would like to have you explain why it is that so many persons can appear to be so healthy in spite of the fact that they eat cooked food which, according to you, cannot long sustain life?

That is a good question. You see, we all come into the world with an inheritance. It is our legacy from the past. Some of us have huge vitality reserves in our health bank account, others, less fortunate, have a lesser amount; still others possess a bare minimum to sustain life for only a short time. The greater vitality we have, the more value we will receive from the food we eat because our nerve energy allows for greater digestive efficiency. If our vitality has been reduced for one reason or another, we will not be able to digest, absorb, transport or assimilate nutrients with the same degree of efficiency. In time, our vital force will dwindle away and we will become more and more vulnerable; that is, subject to disease because we will become malnourished and enervated. Toxicosis becomes our companion, instead of radiant health.

If we have always eaten mostly of cooked foods, can we change immediately over to eating raw foods entirely?

I must give a qualified answer here simply because there are many variables to consider. Let me state firmly and without equivocation, however, that nothing but good can come by making a radical and complete changeover from eating all cooked food to eating all uncooked food provided it is food to which your body is adapted by structure and by function, namely, fruits, vegetables, a few nuts and edible seeds. However, not all persons can do so without being subject to certain psychological hang-ups and, if their bodies are quite toxic, to "withdrawal" symptoms of one kind or another. Age is certainly a determining factor. In our practice we find very few elderly people who can make abrupt changes without worrying unduly, even to the extent that their health is adversely affected by their emotional state. In such cases, it is our belief that until the mind has been reeducated, it is better to make changes more slowly. When persons are willing to fast, having come to an understanding of the benefits to be accrued thereby, then, of course, they should fast and following the cleansing of their body, they should immediately become "raw-fooders." But, let us emphasize that, all other things being precisely equal, nothing but good can come from introducing more uncooked food into the dietary regimen, even though the initial steps be small and hesitant. Keep at it. Your entire body will say, "Thank you!"

Dr. McCarter, what is life?

I wish I knew. I'd probably win the Nobel Prize! But, seriously, no one knows this secret. It is locked up within all living creatures. We know certain things that happen within a living cell but we are just beginning to take our first hesitant steps across the membranous barriers via electron microscopes and radioactive isotopes but even our most liberal scientists admit that the inner world of life is still a vast unknown of maybe's and perhapses. Everything that is alive has the power to receive impressions and to react there—from or thereto; it also has the power to reproduce itself and, in the doing, to make certain that LIFE continues. Certainly we know when something is dead, without life; but, to spell out exactly what this phenomenon of life is and what makes it so, is beyond man's knowledge and probably will always remain the Creator's secret.

I always thought the acids in the stomach would destroy all life. Do not these acids destroy the "life" in food?

Let me ask another question in answer to yours. The cells in the stomach, are they not alive? Of course, the answer is "Yes!" But, they are not destroyed by the gastric secretions. Food is not alive in this same sense. Uncooked food, however, should be capable of producing life if it is returned to the soil. For example, we can take a portion of carrot, place it in the soil, water it and see to it that it receives all the requisites of its organic existence and it will send forth leaves and grow. Raw food contains the food for life: enzymes, minerals, vitamins. In other words, uncooked foods contain the essence of life and it is this that is imparted to us when we eat of them and it is this essence that will sustain our own life in health.

If we eat always of raw foods from the day of our birth, will we live forever?

Probably not. Lewis Carrell, a Nobel prize winner, a renowned physician and surgeon, proved that when cells are correctly fed and kept in a friendly environment with proper drainage of wastes, they could continue living and reproducing themselves indefinitely. Perhaps if man lived ideally and always under ideal conditions, he might also live indefinitely in health but it is doubtful that we will ever be able to live under such ideal circumstances. There are too many variables to guarantee life. We are all subject to physiological assaults of one kind or another and each one leaves an imprint, each one subtracts some measured amount from our vital force bank account.

You talk about our vital force bank account? Can't we use some of that vital force and then put it back by proper eating and living?

Probably not. Once used, it cannot be replenished by changing our ways and assuming a more correct lifestyle. However, this does not mean that all is lost. By no means. We will no doubt have a diminished supply of vital force, but we can, by constructive application of principle and devotion to the sacredness of life, learn to use our vital force more efficiently. Most people dissipate fully two-thirds of their quota of vital force by the time they reach the age of thirty but if they learn how to live correctly and to eat foods adapted to the human structure and how to eat that food and to see to it that they eat a minimum (adequate) amount of food, then they will extend their life span far beyond those who continue the common pattern of living and eating.

You talk about using our vitality more efficiently. What do you mean by this and how can we do it?

Let me give you an example. Foods have differing orders of digestibility and it is interesting to know that those foods that are most easily and thoroughly digested are the foods that are

best for our health. When we eat a meal which contains meat, potatoes, bread, butter, a vegetable or two and then top it off with a rich dessert, such a meal and its remains after the digestive process has been concluded may remain in the alimentary canal for several days, especially if more food is eaten during the day. This is the common practice and it is exceedingly wasteful of energy because the digestive organs and glands are required to work at full capacity for hours on end trying to cope with such a heterogeneous mixture of food. But, to the contrary, when we eat mono meals, say of fruit, the food will be in and out of the stomach in less than an hour in most cases, and the entire trip from mouth to anus will be travelled and the residual wastes disposed of in less than 24 hours, often in half that time. Can you imagine the savings of energy to say nothing of the increased efficiency of digestion obtained by eating only those foods which are best' adapted to our digestive equipment? We conserve our energy in order to live long and in health.

I had always been told that raw foods contained molds and germs and that this is why it is better to eat of cooked food. Can you address this issue?

Gladly. Germs and molds are made up of protein. They will be digested in the stomach just like any other protein. The only time they will be able to gain a foothold in the digestive canal is when it becomes highly toxic. Then, they find a smorgasborg of food laid out before them and ideal conditions under-which to live. They will, of course, become fat and healthy, reproduce rapidly adding their own toxins to those already present, placing their host's well-being in jeopardy. But, in the normal (and we mean really normal as in "healthy" person, they will simply be digested. Incidentally, the only way to rid the intestinal tract of unwelcome pests is to remove their food supply since all living things require food. The best way to do this is to fast using only distilled water to satisfy thirst.

Should a person never eat any cooked food?

If a person's stomach is highly inflamed due to past indiscretions and perhaps filled with mucus and catarrh, then he may have to continue eating cooked food but his meals should be simple ones, if he eats at all. It would be far better to have such a person, fast until his alimentary tract has been both cleansed and health and then introduce raw foods one at a time, reeducating his digestive tract and his mind to accept this new way of eating. With older persons who are afraid to fast, we lay out menus to follow which are, at first, made up of all cooked food properly combined and then proceed to introduce more and more uncooked food. We have great success using this approach. They especially seem to adapt well to lightly stewed or baked fruit for their first meal as, for example, a baked apple. After a week or two, we then show them how to make a date sauce made in a blender using raw dates and distilled water which they then pour over their baked apple. They usually accept this combination well, both mentally and physiologically and by their acceptance and enjoyment of this one dish become more receptive to our next suggestion! As they watch their health improve, they often become completely converted and eat nothing but uncooked food.

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Article #1: Uncooked, Unmixed, Unseasoned Food by Dr. G.R. Clements

Multitudes are discovering that their diet is wrong, and many of them are turning to the medical doctor for dietetic advice. Dr. Willian says that this course is absurd. He observes:

"The laity took to the doctor, and the doctor is usually a dietary dunce. He knows not how to feed himself, or else he does not practice what he knows. He eats of all the far-fetched, overseasoned and otherwise dietetically abominable dishes, sheds his teeth, hair, and healthy color quite as young as any of his patients, and is a confirmed and incurable dyspeptic at 35. His medical societies and his clubs all spread a "collation" after each meeting—salads, cake, cheese that would make a tanyard smell like a rose garden, sandwiches with sliced sow in the middle, to be topped off with claret punch, capsicum-flavored gingerale and Cuban-Connecticut cigars."

Since it has required time for the body to adjust itself to the use of cooked, mixed and seasoned foods, it will require time for it to recover from this habit, and readjust itself to the use of uncooked, unmixed, unseasoned foods. In fact, it is practically as difficult for the body to repudiate a destructive habit, as for it to resign itself to such habit, as wide experience shows. But there is this difference: since the body suffers a gradual decrease of vitality as it adjusts itself to a destructive habit, so it experiences a gradual gain in vitality as it discontinues a destructive habit.

Evidence to prove the truth of this last statement may be had by him who will diligently test the proposition. I daily receive letters from patients, who under my advice are adopting the uncooked, unmixed, unseasoned diet, in which letters the patients happily declare that they are having a delightful improvement in their health, since adopting this mode of eating.

Bread, butter, milk, meat, eggs, potatoes, coffee, tea are the staple articles of diet of this country. Medical schools raise no voice in protest against this menu. It is the diet of medical doctors and medical hospitals, and the medical profession teaches that this is the standard diet, and must be eaten in ample quantities by all who crave vim, vigor and vitality.

Medical institutions forget that the camel, elephant, rhinoceros and hippopotamus never eat these things. They forget that the dinosaur, megalosaur, magatherium, and mammoth, the mightiest beasts that ever roamed the earth, were herbivorous and frugivorous animals. They forget that great athletes of ancient Greece and Rome were trained on a diet of vegetable and fruit; that Milo the Greek, perhaps the strongest man of history, was a disciple of Pythagoras, and a strict vegetarian. They forget that the giant gorilla feeds on fruits, berries, and herbs, and yet is so powerful that no animal of the wild dares attack him.

Clements Willian further observes:

"Where do we find such muscles of steel and rubber as are those of the agile antelope and the equally agile deer, that run with the wind for a day and a night without tiring? Or where the equally keen sense of sight, hearing, and smell; where such sleepless sharpness of instinct, such tenacity of life, such graceful and perfect physical development? The huge elephant, with the strength of a steam engine, and an intellect that lacks only the faculty of speech to make him a talking philosopher, lives half a dozen centuries, practically on grass. This is not at all strange, when we stop to consider that, botanically, all grains are grasses."

George Hackenschmidt, the greatest wrestler known as the Russian lion, weighing 220 pounds of bone and muscle, toured the world, throwing the huge Greek and Turk wrestlers without difficulty. Of his diet Dr. Bernard remarks:

"His breakfast consists of fresh lettuce and five or six Brazil nuts. The Brazil nuts and some sweet fruits are the only really heavy foods that he eats. All his other meals are composed of fresh fruits and fresh vegetables, eaten raw."

Even here the law of diet is violated, for we find man mixing lettuce with nuts. If we desire perfection in diet, we must strictly adhere to the one-thing-at-a-time, rule.

We hear our students asking: Since you condemn all the menus published by the various authorities, what sort of a diet would you prescribe?

That question forces us to declare ourselves. But our prescription is so simple that a child cannot go astray in following our directions. It also offers a complete solution of the food problem, and still is so elementary that few will consider it worthy of attention.

Go and wash in Jordan and be clean, has never appealed to humanity. It is too simple. Men are looking for signs and magic. The plain and simple are of no value, for these one can understand without education. They forget that the object of education is to lead men away from the truth into error, confusion and complexity, and there leave them lost and bewildered.

Our diet prescription is this; Eat whatever you want to eat, whenever you want to eat, but observing these three fundamental rules:

1. All food must be uncooked;
2. All food must be unmixed;
3. All food must be unseasoned.

Think of the time, toil, worry, and wealth that would be saved, if people would be persuaded to return to his ideal eating method of primitive man, whose height was like the height of the cedars, who was as strong as the oaks...and who lived to see the sun rise and set" for nearly a thousand years, ere his sturdy frame sank back again into the dust whence it came.

With one sweep of the pen we solve the perplexing diet problem, and if our advice were heeded, human health would improve so amazingly in a generation as to be one of the wonders of the world.

From Lesson 21 by Dr. G. R. Clements in Orthopathy The New Science of Health and Natural Healing.

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Article #3: Excerpts From Nutritional Methods Of Blood Regeneration, Part II by Dr. R.W. Bernard

Sherman emphasizes the "protein-sparing" action of carbohydrates, and also refers to the synthetic formation of protein within the body by the formation of simpler amino acids, as analine, by union of glucose with ammonia, a protein metabolic end-product. From the simpler amino acids, he claims that more complex amino acids can be synthesized. An abundance of glucose will therefore aid such protein synthesis within the body, whereas, on the other hand, when there is a lack of carbohydrates and fats, protein molecules will be broken down to yield carbon compounds.

Kayser compared the efficiency of carbohydrates and fats as spacers of protein by observing the effect upon the nitrogen balance of replacing the carbohydrates of the food by such an amount of fat as would furnish the same number of calories. On substituting fat for carbohydrate there was a marked increase of protein catabolism, with corresponding loss of nitrogen from the body; this loss of nitrogen,

accompanied by a negative nitrogen equilibrium, increased each day that the fat diet was continued, but stopped as soon as carbohydrates were added to the diet, when the body almost at once began replacing the protein it had lost, although the nitrogen and calories of the food were practically unchanged.

Taliquint, working in Rubner's laboratory, also found that if one-third of the total value of carbohydrate in the diet was replaced by fat, there was an unfavorable influence on the nitrogen balance, causing a small fall of body protein. Sherman, in his "Chemistry of Food and Nutrition," says: "It appears that the carbohydrate of the food cannot be entirely replaced by an equal number of calories in the form of fat without an unfavorable effect upon the nitrogen balance."

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Article #4: Excerpts From "Unfired Food And Tropho-Therapy" by Dr. George J. Drews, A.I.D.

The Unfired Diet is truly attractive,
Is moral, aesthetic, delicious and good,
And further than this, it is more than preventive -
It cures the disease that come from cooked food.

Cheer up sisters and brothers and rejoice with me for I have found the key that unlocks the door to physical, mental, moral and spiritual salvation and I will tell you how to use that key if you will but listen.

Those who are seeking for absolute health, longevity and refinement should understand that THE BODY, MIND, SPIRIT AND SOUL ARE ABSOLUTELY INTERDEPENDENT.

Hence there is no sane mind, no spiritual perfection and no salvation of the soul without a healthy body. A healthy body can only be built and maintained with Nature's perfect (unperverted and unfired) food, pure water, fresh air, sunshine, exercise, restful sleep and a serene mental attitude savored with lofty aspirations.

It has been the earnest aim of the author to reintroduce a natural health-sustaining, disease-resisting, disease-eliminating, brawn- and brain-building diet consistent with the present state of human evolution, civilization and refinement. A diet which shall promote further evolutionary progress on all the planes of the body, mind, spirit and soul. A diet physiologically and financially economical, artistic, inviting and delicious. All logical minds will agree with me that this can only be accomplished by feeding on natural food which contains all the elements for building a healthy body and which promotes all the natural functions of life.

Here it must be understood that cooked food is not natural because its chemical constitution is changed (perverted) by the destructive power of the applied high temperature. The sun energy (galama) is dissipated. The volatile essences are exploded. The tonic elements (organic salts) have been freed, mineralized and neutralized. The proteins are coagulated. The starches are rendered so soluble that they enter the circulation undigested. The atomic arrangement of sugar is rendered incongenial. And the oils are fused. Therefore cooked food readily ferments and decays in the alimentary canal; besides, its consistency does not give the proper exercise to the organs of cominution, digestion and absorption; and it has a tendency to puzzle, confuse and pervert the alimentary functions, thus laying the foundation for disease.

Natural unfired food promotes all natural functions of the body. With natural foods, only, can be laid the

foundation for the maintenance of a truly healthful and beautiful body, spirit and soul. By means of unfired food can Nature keep the body clean, heal all diseases of body and mind and eradicate immoral tendencies. It is unnatural food which interferes with the natural metabolism of the system, which hinders and perverts natural growth, which retards recuperation and reconstruction, which results in anemia and atonicity, which promotes disorderly proliferation, which causes abnormal craving and inebriety and which results in nearly all the physical, mental and moral diseases and pains which ignorant, misinformed, deluded, ensnared and perverted humanity is heir to. Every attempt to improve on natural food by artificial means results in an absolute failure—it cannot be done.

Every unnatural thing or action in the realm of nature has inherent the cause of its own destruction. Hence for every infection and malfaction nature has an acute reaction (crisis) which results in salvation for those who obey her laws; but interfere with that acute reaction by means of medicine or surgery, and it may disappear only to reappear in a later chronic or fatal reaction. "Interference perpetuates both good and evil" hence—"Resist not evil."

There is a "Beneficent Design" in unperturbed Nature, but also a malefic design in perturbed and artificial Nature....Natural food, fresh water and live air in connection with plenty of sunshine, exercise and rest, is the only reliable "Materia Panacea."

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Article #4: Excerpts From "Nature—The Healer" by John T. Richter, Vera M. Richter

Excerpts from the "Biography" given to introduce the subject of the influence of eating raw foods on health in NATURE—THE HEALER written by John T. Richter and Vera M. Richter. The writer in this excerpt is Mr. Richter. Date, October, 1936.

After having lived for fifteen years largely on a cooked food diet (no meat, of course), I noticed that there was something physically wrong with me. My kidneys were not functioning properly. I seemed to lack recuperative energy. Although I did not feel ill enough to be in bed, I was constantly harassed by a "gone" feeling, lack of power to rebuild myself—in short, general lack of energy. Especially was this forced upon my attention once when I was called out into the country on a consultation. I was practicing independently at that time in Minneapolis. It was a long, hard trip—thirty miles over the prairies, and back to the city only at four in the morning. It was too late to have any real rest in bed, as I thought; therefore I simply waited around until it was time to have breakfast. Then I went to the office to get ready for business. The patients were already coming in, but I was so tired that every now and then I would find myself dozing over my work. I would shake myself, take a swallow of cold water, and rub cold water over my face. Yet in a moment or two I would again be nodding. I was nonplussed, not to say alarmed, at this lack of reserve energy. I became dizzy, too, at intervals. What was there in my system of living that was wrong? Had I not at least been eating correctly? That set me thinking.

It was not, however, until later that I became convinced it was really the food I had been eating which was at fault. This is how it came about: in a naturopathic magazine which had come to my hands, there was an article describing how a certain Dr. Lust had been invited by Dr. George Drews of Chicago to partake of an uncooked food dinner. It told of the many different varieties of food that, were served, of how delicious they were. It said something, too, about raw pie. I thought, "How curious, unbaked pie!" I remembered how mother used to make hers. But this was raw pie. The whole idea took me by surprise. How can people live on uncooked food, I wondered, just as people today ask me the very same question.

I kept thinking about it, however, and finally decided to give this new diet a trial, to see if it would bring me that unlimited reserve of energy which I so ardently desired, as well as freedom from the more obvious diseases. Dr. Drew came to Minneapolis to teach me, as well as the class I had organized for him. Gradually, my health began improving, as the result of faithful adherence, one hundred percent, to the prescribed diet. In six months such a change had been wrought in my body that it seemed logical to use the new system in my practice in order to observe how it would affect others. After a period of nine months, I realized that the nature of my bloodstream had been completely transformed. My blood, under tests, had previously shown too much acid present. Now it had become slightly alkaline, which is the normal state for one who is in first-rate health. We now know that cooked-food vegetarians, as well as meat eaters, alike suffer from too much acid in the bloodstream as a rule. Nine months had been required in my case, but many others require only from three to six months. You can well suppose that I was very happy when I found my blood was sufficiently alkaline. What a mental relief and assurance to know that I was getting better at last! As to weight, when I first began, my 145 pounds dwindled away to 123. Many of my friends told me, as yours will undoubtedly tell you, that I had better quit before starving to death. Yet, realizing that my old, worn-out body cells had to be utterly eliminated before new cellular tissue could take their place, I remained faithful to my task. All the while, of course, even though seeming to be thin, I felt much better than I ever had before, and really did not care whether the scale index went up or down. Soon I redeemed that loss—redeemed every pound and a little additional.

For many years now I have lived according to this system. I was in the late forties when I started. Today, at 84 (I was born in 1864), I am active and without disabilities of any kind. No aches or pains have plagued me for many years.